

REMARKS

Claims 1-33 and 46-70 are pending. Claims 34-45 are canceled without prejudice or disclaimer. New claims 46-70 are supported throughout the text. Typographical errors are corrected in the specification and drawings. Applicant respectfully submits that no new matter has been introduced in this Amendment. Reconsideration and allowance of the claims in view of the remarks that follow are respectfully requested.

Objections

In the Office Action, the Examiner objected to various informalities in the drawings.

In particular, the Examiner objected to FIGURE 11 for failing to show reference numeral 1126. Applicant has amended FIGURE 11 to change reference numerals 1128 and 1120 to numerals 1126 and 1128, respectively, to accord with the specification on page 26, lines 10-19, and add reference numeral 1120 to point to the setting of Gradient Wave Scan. A substitute copy of FIGURE 11, incorporating the above-noted modifications in red ink, is attached for the Examiner's consideration, as requested by the Examiner.

The Examiner also objected to various textual omissions of reference numerals in the specification, although illustrated in the drawings.

Regarding FIGURE 2, the specification has been amended to refer to output lines 251 and 253.

Regarding FIGURE 3, the specification has been amended to refer to the Fast Spin Echo drop-down dialog box 392 and the Fast Gradient Echo drop-down dialog box 394.

Regarding FIGURE 5, Applicant has amended the figure to remove extraneous reference numerals 410 and 481. A substitute copy of FIGURE 5, incorporating the above-noted revisions in red ink, is attached for the Examiner's consideration.

Regarding FIGURE 8B, Applicant has amended the figure to remove the reference number 800 therein. A substitute copy of FIGURE 8B, incorporating the above-noted revision in red ink, is attached for the Examiner's consideration.

Regarding FIGURE 11 again, the specification has been amended to refer to the ScanSettings drop-down box 1002 and the MRI Scans option 1004.

Regarding, FIGURE 13A, the specification correctly refers to the Edit menu item by the reference numeral 350. Applicant has more explicitly amended the figure to better indicate the usage of reference numeral 350.

Regarding, FIGURE 18B, the specification has been amended to refer to the control menu section 1810.

Lastly, regarding FIGURE 19, the specification has been amended to refer to the ETL 1912.

Applicant thanks the Examiner for her careful and thorough consideration of the specification and drawings, and the correspondence thereto. In accordance with the Examiner's express directive, Applicant is submitting a letter to the Draftman pursuant to M.P.E.P. § 608.02(r), and red inked versions of FIGURES 5, 8B, 11 and 13A illustrating the proposed changes to overcome the objections noted in the Office Action. Upon approval of the indicated changes to the figures, Applicant shall prepare formal drawings for submission.

Applicant includes same additional textual corrections to the specification to attend to various typographical errors, e.g., the specification paragraphs beginning on page 11, line 9; on page 20, lines 15, 16 and 18; and page 21, line 1.

Replacement paragraphs for the various textual changes are also set forth in this response. Applicant respectfully submits that no new matter has been introduced in this response.

On page 4 of the Office Action, the Examiner objects to the specification. Specifically, the Examiner objects to the reference to Figure 2 on page 13, particularly, the typographical error in the use of the word "not." Applicant has corrected the error and replaced the word with "now," which was properly used in the original specification and mistakenly altered in the Preliminary Amendment. Applicant apologizes for the inconvenience caused by this typographical error.

Also, the Examiner objects to the reference to Figure 9A on page 22. Applicant has amended the specification to correctly indicate that the selection dialog box 950 is shown in FIGURE 9C. The shape editor dialog box 900 is illustrated in FIGURE 9A.

With these amendments, the specification and drawings have been amended to correct minor typographical errors and to correct the one-to-one correspondence between the reference numerals in the figures and the reference numerals in the description. Withdrawal of the objections to the drawings and the specification is, accordingly, respectfully requested.

Claim Rejections

In the Official Action, the Examiner rejected claims 1-33 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,317,260 to Kasten et al. (hereinafter "Kasten").

Applicant has reviewed the Examiner's rejections of claims 1-33 over various portions of the Kasten reference, e.g., Figure 2, the abstract, etc. Although Applicant concedes that Kasten is an early example of a graphical user interface in the MRI arts,

Applicant respectfully submits that the instant claims, as amended, are readily distinguishable from the disclosure of Kasten.

Kasten is quite representative of the primitive user interfaces noted in the Background section of the present invention. As noted many times throughout the Kasten disclosure, the sequences employed by users of the Kasten apparatus are always “standard pulses” and combinations thereof.

These standard sequences are, as a rule, subcombinations of a set of standard pulses . . . as well as sequences of such pulses, from which the sequences are so to speak “composed”,

Kasten, col. 6, lines 24-28; see also, col. 2, lines 34-39 (standard and predefined pulses); col. 2, lines 40-49 (variation of standard pulse sequences prepared by subprograms); col. 3, lines 24-28, 40-44; the claims and the abstract (“modification of standard pulse sequences and/or by composition from standard pulses.”).

Kasten fails to describe any dynamic, interactive and non-standard pulse sequence formation. Instead, all data entry, whether by user input or mouse, in Kasten creates at best concatenational combinations of standard sequences. The reason for this “canned” approach is simple, particularly for devices of Kasten’s vintage (pre-1991): compilation simplification. Through combination of known elements only, the program running the sequences is able to generate a result without recompilation of the entire new combination, assuming the most liberal interpretation of the Kasten reference on this point (“programming” is briefly discussed at col. 7, line 62 to col. 8, line 6 *et seq.*).

Anything beyond these canned routines of known components (or subprograms at col. 2, lines 40-49) Kasten utterly fails to address, and for good reason: reprogramming and coding are very time consuming and Kasten wanted to simplify such tasks. Although showing rudimentary icon usage, Kasten does not describe or suggest a real-time, interactive graphical user interface operable under a non-standardized environment.

The prior art made of record but not cited in the Official Action appear of no more relevance than Kasten and exemplary of the static and standardized pulse sequence generation approaches described in the Background portion of the instant application.

The present invention, as claimed, provides the full panoply of graphical user interfacing with pulse sequence design. An advantage of the present invention is dynamic and real-time manipulation of pulse sequences, generating entirely new sequences through modification of the sequence itself, i.e., not a canned insertion of a known, standard sequence as with Kasten. Indeed, the manipulation of the sequences, e.g., by moving a node with a

mouse, dynamically creates new sequences and waveforms and the resolution of consequences therefrom, e.g., integral conditions on the waveform being satisfied resulting in area changes.

The dynamic utilization of the present invention is in marked contrast to the standardized code blocks approach of Kasten. The “on the fly” approach of the instant invention provides a true real time view of sequence and waveform design and manipulation. Kasten, as discussed in the Background, represents one of the precursors of the tools employed in sequence pulse design. Static design, using building blocks of code, is the way of Kasten. Going beyond these constraints in the world of Kasten entails intense reprogramming and interaction with the programmers to implement such non-standard format coding. The instant invention, as claimed, offers a strong enhancement over this approach, readily distinguishing the present invention over art such as Kasten.

Applicant respectfully requests that the Examiner reconsider and withdraw her § 102(b) rejection of the claims over Kasten.

New claims 46-70 are directed to related subject matter of the present invention, and include language directed to the dynamicism and innovation of the present invention over the prior art, such as Kasten. Support for new claims 46-70 is found throughout the specification and the drawings. Applicant respectfully submits that no new matter has been introduced herein.

Should the Examiner feel that a telephonic or personal interview be useful in facilitating resolution or allowance in this case, the Examiner is invited to contact Applicant’s representative indicated below.

Due to a recent change in law firms, Applicant’s representative has a new address. The requisite Change of Correspondence Address form, executed by Applicant’s representative, is attached hereto.

In view of the above remarks, Applicants respectfully assert that the application is in condition for allowance. Prompt examination and allowance of claims 1-33 and 46-70 are respectfully requested.

Respectfully submitted,



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